


# Thomas Moskal CSC 344

## Assignment #1: First Interactions

Abstract – This Assignment was a first run with basic Racket features. We explored syntax, mathematical capabilities and graphic design creation. Racket is a powerful tool for it's simple nature so far. In the first and second demonstrations we went through specifically math tools. While in the third demonstration a simple graphic was created. The squares assignment took a little bit of time to get the pieces together but once all the variables were defined, creating something with them was simple. The final calculation was a fairly simple but interesting mathematical calculation. It is a good example of how to measure some of the graphics that can be created.

### Simple Numeric Processing

```
Welcome to DrRacket, version 8.3 [cs].
Language: racket, with debugging; memory limit: 128 MB.
> 55
55
> 55.2
55.2
> pi
3.141592653589793
> (* 3 8)
24
> (+(* 3 8) 6 )
30
> ( expt 2 8)
256
> (* pi( expt 7 2))
153.93804002589985
> (exot 9 50)
 exot: undefined;
cannot reference an identifier before its definition
> (expt 9 50)
515377520732011331036461129765621272702107522001
>
```

## Red/Blue Tile Area Problem Solution

Welcome to [DrRacket](#), version 8.3 [cs].

Language: [Determine language from source](#); memory limit: 128 MB.

```
> ( define side-of-tile 200 )
> ( define diameter-of-dot ( / side-of-tile 3 ) )
> ( define radius-of-dot ( / diameter-of-dot 2 ) )
> ( define total-tile-area ( expt side-of-tile 2 ) )
> ( define red-dot-area ( * pi ( expt radius-of-dot 2 ) ) )
> ( define blue-tile-area ( - total-tile-area red-dot-area ) )
> side-of-tile
200
> diameter-of-dot
 $66\frac{2}{3}$ 
> radius-of-dot
 $33\frac{1}{3}$ 
> total-tile-area
40000
> red-dot-area
3490.658503988659
> blue-tile-area
36509.341496011344
> |
```

## Painting The Blue & Red Tile

Welcome to [DrRacket](#), version 8.3 [cs].

Language: racket, with debugging; memory limit: 128 MB.

```
> ( require 2htdp/image )
```

```
> ( define side-of-tile 200 )
```

```
> (define diameter-of-dot ( / side-of-tile 3 ) )
```



```
definte: undefined;
```

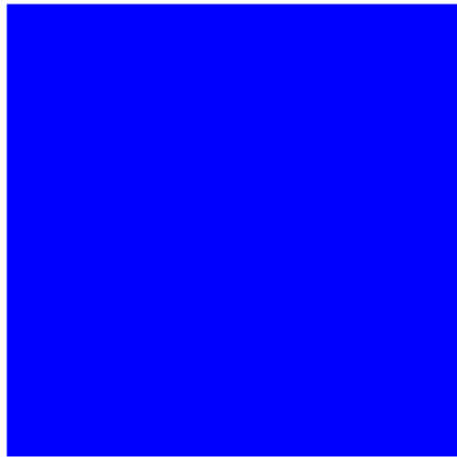
```
cannot reference an identifier before its definition
```

```
> ( define diameter-of-dot ( / side-of-tile 3 ) )
```

```
> ( define radius-of-dot ( / diameter-of-dot 2 ) )
```

```
> ( define tile ( square side-of-tile "solid" "blue" ) )
```

```
> tile
```

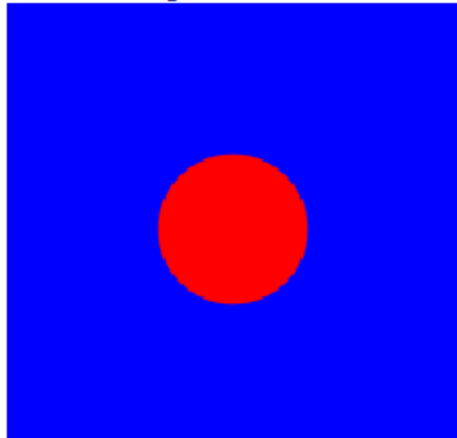


```
> ( define dot ( circle radius-of-dot "solid" "red" ) )
```

```
> dot
```



```
> ( overlay dot tile )
```



## Painting The Concentric Squares Image

```
> square 88.88 "solid" "red"  
#<procedure:square>  
88.88  
"solid"  
"red"  
> ( square 88.88 "solid" "red" )
```



```
> ( define red_square_small ( square 88.88 "solid" "red" ) )  
> red_square_small
```



```
> ( define base_size ( 88.88) )
```



```
application: not a procedure;  
expected a procedure that can be applied to arguments  
given: 88.88
```

```
> (define base_size 88.88 )
```

```
> base_size
```

```
88.88
```

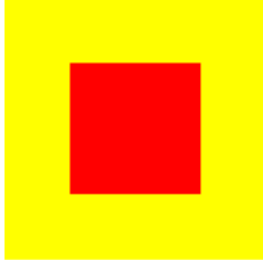
```
> ( define yellow_square ( square ( * 2 base_size ) "solid" "yellow" ) )
```

```
> yellow_square
```



## Painting The Concentric Squares Image Cont...

```
> ( overlay red_square_small yellow_square )
```

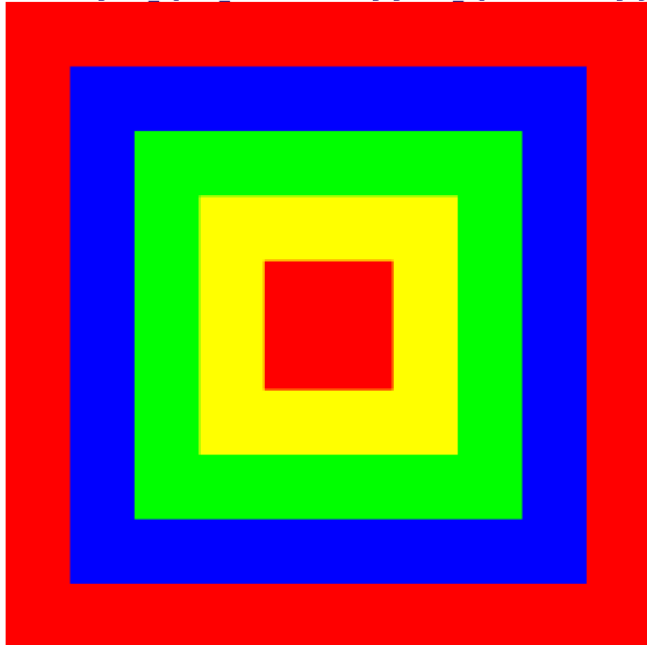


```
> ( define green_square ( square ( * 3 base_size ) "solid" "green" ) )
```

```
> ( define blue_square ( square ( * 4 base_size ) "solid" "blue" ) )
```

```
> (define large_red_square ( square ( * 5 base_size ) "solid" "red" ) )
```

```
> (overlay red_square_small ( overlay yellow_square ( overlay green_square ( overlay blue_square large_red_square ) ) ) )
```



## Computing The Percent Of The Concentric Squares Image Which Is Red

Welcome to [DrRacket](#), version 8.3 [cs].

Language: [racket](#), with [debugging](#); memory limit: 128 MB.

```
> ( define base_size 88.88 )
> ( define small_red_area ( * base_size base_size ) )
> ( define blue_area ( * ( * 4 base_size) ( * 4 base_size) ) )
> ( define large_red_area ( * ( * 5 base_size) ( * 5 base_size) ) )

> ( define total_red_percentage (* (/ (+ (- large_red_area blue_area ) small_red_area) large_red_area) 100) )
> total_red_percentage
40.0
>
```